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EXAMINER	
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ART UNIT	**PAPER NUMBER**
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NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/535,555	RAZZELL, CHARLES	
	Examiner	Art Unit	
	Charles Chow	2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 June 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Detailed Action

1. This office action is for the amendment received on 6/6/2007.

Specification

2. The disclosure is objected to because of the following informalities: The specification does not contain the section headings, because Each of the lettered items should appear in upper case, as section heading, as shown in below with the underlined. Appropriate correction is required. The section headings are needs to added accordingly, as shown in below, based on the rule, 37 CFR & the MPEP in below.

Content of Specification

(a) Title of the Invention: See 37 CFR 1.72(a) and MPEP § 606. The title of the invention should be placed at the top of the first page of the specification unless the title is provided in an application data sheet. The title of the invention should be brief but technically accurate and descriptive, preferably from two to seven words may not contain more than 500 characters.

(b) Cross-References to Related Applications: See 37 CFR 1.78 and MPEP § 201.11.

(c) Statement Regarding Federally Sponsored Research and Development: See MPEP § 310.

(d) The Names Of The Parties To A Joint Research Agreement: See 37 CFR 1.71(g).

(e) Incorporation-By-Reference Of Material Submitted On a Compact Disc: The specification is required to include an incorporation-by-reference of electronic documents that are to become part of the permanent United States Patent and Trademark Office records in the file of a patent application. See 37 CFR 1.52(e) and MPEP § 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text were permitted as electronic documents on compact discs beginning on September 8, 2000.

(f) Background of the Invention: See MPEP § 608.01(c). The specification should set forth the Background of the Invention in two parts:

(1) Field of the Invention: A statement of the field of art to which the invention pertains. This statement may include a paraphrasing of the applicable

U.S. patent classification definitions of the subject matter of the claimed invention. This item may also be titled "Technical Field."

(2) Description of the Related Art including information disclosed under 37 CFR 1.97 and 37 CFR 1.98: A description of the related art known to the applicant and including, if applicable, references to specific related art and problems involved in the prior art which are solved by the applicant's invention. This item may also be titled "Background Art."

(g) Brief Summary of the Invention: See MPEP § 608.01(d). A brief summary or general statement of the invention as set forth in 37 CFR 1.73. The summary is separate and distinct from the abstract and is directed toward the invention rather than the disclosure as a whole. The summary may point out the advantages of the invention or how it solves problems previously existent in the prior art (and preferably indicated in the Background of the Invention). In chemical cases it should point out in general terms the utility of the invention. If possible, the nature and gist of the invention or the inventive concept should be set forth. Objects of the invention should be treated briefly and only to the extent that they contribute to an understanding of the invention.

(h) Brief Description of the Several Views of the Drawing(s): See MPEP § 608.01(f). A reference to and brief description of the drawing(s) as set forth in 37 CFR 1.74.

(i) Detailed Description of the Invention: See MPEP § 608.01(g). A description of the preferred embodiment(s) of the invention as required in 37 CFR 1.71. The description should be as short and specific as is necessary to describe the invention adequately and accurately. Where elements or groups of elements, compounds, and processes, which are conventional and generally widely known in the field of the invention described and their exact nature or type is not necessary for an understanding and use of the invention by a person skilled in the art, they should not be described in detail. However, where particularly complicated subject matter is involved or where the elements, compounds, or processes may not be commonly or widely known in the field, the specification should refer to another patent or readily available publication which adequately describes the subject matter.

(j) Claim or Claims: See 37 CFR 1.75 and MPEP § 608.01(m). The claim or claims must commence on separate sheet or electronic page (37 CFR 1.52(b)(3)). Where a claim sets forth a plurality of elements or steps, each element or step of the claim should be separated by a line indentation. There may be plural indentations to further segregate subcombinations or related steps. See 37 CFR 1.75 and MPEP § 608.01(i)-(p).

(k) Abstract of the Disclosure: See MPEP § 608.01(f). A brief narrative of the disclosure as a whole in a single paragraph of 150 words or less commencing on a separate sheet following the claims. In an international application which has entered the national stage (37 CFR 1.491(b)), the applicant need not submit an abstract commencing on a separate sheet if an abstract was published with the international application under PCT Article 21. The abstract that appears on the

cover page of the pamphlet published by the International Bureau (IB) of the World Intellectual Property Organization (WIPO) is the abstract that will be used by the USPTO. See MPEP § 1893.03(e).

(l) Sequence Listing, See 37 CFR 1.821-1.825 and MPEP §§ 2421-2431. The requirement for a sequence listing applies to all sequences disclosed in a given application, whether the sequences are claimed or not. See MPEP § 2421.02.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

3. Claims 1-2 are rejected under 35 U.S.C. 102(e) as being anticipated by Hughes et al. [US 2003/0207,676 A1].

For claim 1, Hughes et al. [hereafter as Hughes] teaches a method of operating a radio receiver [method in steps of Fig. 3/Fig. 1 of the wireless device 100 & its corresponding description in the specification],

having an analog portion [the portion from the antenna to base band filters BBF 118 via IF amplifiers 116 in receiver 102, Fig. 1] coupled to an A/D converter [A/D in 102], and

the A/D converter coupled to a digital signal processing portion [the A/D outputs are sent to processing 104 for data receive; the DSP for 104 in paragraph 0102], comprising

obtaining a wideband signal power estimate of the total signal power reaching the A/D converter [the wide band power measure 106 obtains the total wide power at the input of A/D, Fig. 1, to mitigating the received power overloading via AGC 108 in paragraph 0008-

0009; step 302 in paragraph 0015; to saturate the base band filters, in front of A/D, paragraph 0002-0004],

preventing the total signal power reaching the A/D converter from exceeding a maximum allowable input amplitude [to preventing the total power from exceeding the pre-programmed threshold, as the maximum allowable amplitude, & to quickly mitigate the received power overloading in paragraph 0010, by adjusting the gain of IF 116 in paragraph 0008-0009, 0013, 0017, by comparing with the allowable threshold in steps 304/310; the saturation of the base band filters in paragraph 0002. It is well known that the A/D converter has the operable upper input power level restriction. Therefore, the preventing the BBF 118 from saturation is to limiting the A/D input power level outputted from BBF 118].
{ Note: Takatz [US 7,046,749 B2] also teaches the preventing total signal power reaching A/D converter from exceeding a maximum allowable input amplitude, the limiting of the clipping of the ADC 14 with a predetermined level, col. 4, lines 3-8 & col. 4, lines 27-60}.

For claim 2, Hughes teaches the method [Fig. 3/ Fig. 1] above in claim 1, wherein preventing the total signal power reaching the A/D converter from exceeding a maximum allowable input amplitude comprises detecting a wide-band signal power [106] greater than a predetermined first threshold [the comparing of measured wide band power with a threshold in steps 304/310 Fig. 3] and

responsive thereto, reducing the gain of at least one amplifier coupled to an input terminal of the A/D converter [to preventing the total wide band power from exceeding the pre-programmed threshold, as the maximum allowable amplitude, to quickly mitigate the power overloading paragraph 0010, by adjusting the gain of IF 116 in paragraph 0009; the mitigating a received power overloading in paragraph 0008, 0013, 0017; the comparing with the allowable threshold in steps 304/310].

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 3-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hughes in view of Shi [US 2005/0079,842 A1].

For claim 3, Hughes teaches the method [Fig.3/Fig. 1], but fails to teach the sigma-delta A/D.

Shi teaches the wherein the A/D converter is a sigma-delta A/D converter [Σ-Δ ADC 217], to avoid the intermodulation interference. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to upgrade Hughes with Shi's detecting of wide band signal power, such that the receiver could avoid the intermodulation interference.

For claim 4, Hughes teaches the method [Fig.3/Fig. 1], but fails to teach the detecting an in-band signal power greater than a predetermined second threshold.

Shi teaches the detecting an in-band signal power greater than a predetermined second threshold and, responsive thereto [the step 610, narrow band signal power Rssi_B, threshold_C in step 612 & reducing LNA gain in 614, steps 612, 614, 616, Fig. 6], reducing the gain of at least one amplifier coupled to an input terminal of the A/D converter [to reduce the gain of LNA 210, paragraph 0044, for Σ-Δ ADC 217], using the same rationale in claim 3 above to combine Shi to Hughes.

For claim 5, Hughes teaches the method [Fig.3/Fig. 1], the rf amplifier 120, but fails to teach the placing the first variable gain amplifier in a low gain state if a wide-band signal power is greater than a first threshold.

Shi teaches the method for placing the first variable gain amplifier [LNA 210] in a low gain state [reducing the gain in step 604] if a wide-band signal power is greater than a first threshold [step 602, the wide band Rssi_A is greater than threshold_A], using the same rationale in claim 3 above to combine Shi to Hughes.

For claim 6, Hughes teaches the method [Fig.3/Fig. 1], the rf amplifier 120, but fails to teach but fails to teach the wide-band signal power is less than a first threshold, together with the narrow band signal power is greater than a second threshold.

Shi teaches the wherein the radio receiver [200] includes a first variable gain amplifier [LNA 210], and the method further comprises

determining that a wide-band signal power is less than a first threshold [step 602, wide power Rssi_A is less than thres_A, then, go to step 608]; and placing the first variable gain amplifier in a low gain state if a narrow-band signal power is greater than a second threshold [reducing the gain of LNA at 616 after narrow power Rssi_B is greater than thres_C at 614], such that the first variable gain amplifier could be reduced based on the detected narrow band power level, as rationale to combine Shi to Hughes.

5. Claims 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hughes in view of Shi, as applied to claim 6 above, and further in view of Walker et al. [US 2005/0208,919 A1].

For claim 7, Hughes teaches the method [Fig.3/Fig. 1], rf amplifier 120, but fails to teach the low gain state.

Shi teaches the wherein the first variable gain amplifier is placed in a low gain state if the narrow-band power is greater than the second threshold [the narrow Rssi_B is greater than thres_C at step 612, then, to reduce the gain of LNA, step 616], using the same rationale in claim 3 above to combine Shi to Hughes.

Hughes & Shi fail to teach the hysteresis value for the threshold.

Walker teaches the hysteresis value for the threshold [the hysteresis for the gain stepping in Fig. 4C, for the gain rising & gain falling, low gain in table 1, paragraph 0078-0080], for reliable controlling the gain changes with hysteresis. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to upgrade Hughes, Shi with Walker's hysteresis, in order to reliably controlling the gain changes with hysteresis.

For claim 8, Hughes teaches the method [Fig. 1/Fig. 3], rf amplifier 120, but fail tot each the high gain state if the narrow-band power is less than the second threshold.

Shi teaches the wherein the first variable gain amplifier [LNA] is placed in a high gain state [step 706] if the narrow-band power is less than the second threshold [the narrow Rssi_B is less than thres_C at step 612, then, to step 702, to increase the gain of LNA at step 706].

Hughes, Shi fail to teach the hysteresis value for the threshold.

Walker teaches the hysteresis value for the threshold [the hysteresis for the gain stepping in Fig. 4C, for the gain rising & gain falling, low gain in table 1, paragraph 0078-0080], using the same reasoning in claim 8 above to combine Walder to Hughes & Shi.

For claim 9, Hughes & Shi teaches fail to teach the same hysteresis value.

Walker teaches the wherein the first hysteresis value and the second hysteresis value are the same [the same hysteresis value, from L1-Fall going towards L1-Rise or from L1-

Rise going towards L1-Fall, in Fig. 4C for raising the gain or reducing the gain], using the same rationale in claim 8 above to combine Walder to Hughes & Shi.

6. Claims 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takatz et al. [US 7,046,749 B2] in view of Hughes-'676 A1 and Shi-'842 A1.

For claim 10, Takatz et al. [Takatz] teaches a method of preventing saturation of a sigma-delta A/D converter in a radio receiver [Fig. 1, Fig. 5A-5C & the description in specification, claims 1, 6-7; the AGC loop coupled to VGA 12 for limiting the signal clipping by ADC 14, col. 3, line 65 to col. 4, line 8 & col. 4, lines 41-48],

having digital channel selectivity circuitry [digital filter 17-I, 17-Q, Fig. 1].

Takatz fails to teach the wide band power estimation.

Hughes teaches the wide band power estimation [the wide band power measure 106 obtains the total wide power at the input of A/D, Fig. 1, paragraph 0008-0009; step 302 in paragraph 0015], in order to control the front end gain based on the detected wide band power level. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to upgrade Takatz with Hughes' wideband power estimation, such that the front end gain could be controlled according to the detected wide band power level.

Takatz & Hughes fail to teach the obtaining a wide-band power estimation and a narrow-band power estimation; the reducing an amplifier gain of a first one of a plurality of amplifiers if the wide-band power estimation is greater than a first predetermined value; if the wide-band power estimation is not greater than the first predetermined value, reducing the gain of at least one of the plurality of amplifiers if the narrow-band power estimation is greater than a second predetermined value.

Shi teaches the comprising obtaining a wide-band power estimation [218, paragraph 0043] and a narrow-band power estimation [220, oo43]; reducing an amplifier gain [step 604] of a first one of a plurality of amplifiers [first amplifier LNA 210] if the wide-band power estimation [wide power Rssi_A] is greater than a first predetermined value [if wide power Rssi_A is greater than thres_A at step 602]; and

the wide-band signal power estimation [218, paragraph 0043] is not greater than a first predetermined value [step 602, wide power Rssi_A is less than thres_A, then, go to step 608], reducing the gain of at least one of the plurality of amplifiers

if a narrow-band power is greater than a second predetermined value [reducing the gain of LNA at 616 after narrow power Rssi_B is greater than thres_C at 614], to avoid the intermodulation interference [paragraph 0044]. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to upgrade Takatz, Hughes with Shi's detecting of wide band signal power, such that the receiver could avoid the intermodulation interference.

For claim 11, Takatz teaches the method [Fig, 1, Fig. 5A-5C, its description & claims 1, 6-7], wherein the first predetermined value is selected [the in this instance, selecting a -3 dBm threshold, col. 4, lines 55-63] so as to reduce the occurrence of ADC saturation due to out-of-band signal power [to limit the signal clipping at ADC 14, col. 3, line 65 to col. 4, line 8].

7. Claims 15-17, 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hughes in view of Shi and Takatz.

For claim 15, Hughes teaches a radio receiver [Fig. 1] comprising an analog down converter [A/D in 102]; and automatic gain control circuitry [wide band AGC 108 & on-

channel AGC 110], the automatic gain control circuitry configured to receive a wide-band signal power estimate [the wide band power measure 106 sending detected power to wide band AGC 108, Fig. 1 & paragraph 0008].

Hughes fails to teach a digital base band processor including selectivity circuitry; the including a plurality of serially coupled variable gain amplifiers; an analog-to-digital converter connected to one of the plurality of variable gain amplifiers, and a narrow-band signal power estimate.

Shi teaches the narrow-band signal power estimate [estimating narrow power Rssi_B at 220], to avoid the intermodulation interference [paragraph 0044]. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to upgrade Hughes with Shi's detecting of wide/narrow band signal power, such that the receiver could avoid the intermodulation interference.

Hughes & Shi fails to teach a plurality of serially coupled variable gain amplifiers; an analog-to-digital converter connected to one of the plurality of variable gain amplifiers; a digital base band processor including selectivity circuitry.

Takatz teaches a plurality of serially coupled variable gain amplifiers; an analog-to-digital converter connected to one of the plurality of variable gain amplifiers [the ADC 14 is connected to VGA3 of the VGA1 to VGA3 in Fig. 5A],

a digital base band processor [15, 24, 21-23, Fig. 1] including selectivity circuitry [digital filters 17-I, 17-Q], in order to conveniently processing the received signal using the digitally control filter. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to upgrade Hughes, Shi with Takatz's digital base band filter in order to conveniently processing a received signal using the digitally control filter.

For claim 16, Hughes & Shi fail to teach the plurality of variable gain amplifiers VGA are coupled to the automatic gain control circuitry. Takatz teaches the wherein the plurality of variable gain amplifiers VGA are coupled to the automatic gain control circuitry [VGA1 to VGA 3, Fig. 5A, coupled to the AGC loop via D/A 214], such that the gain of the VGAs could be automatically controlled via the AGC, as the rationale to combine Takatz to Hughes & Shi.

For claim 17, Hughes fails to teach the sigma-delta analog-to-digital converter. Takatz teaches the radio receiver [Fig. 1, Fig. 5a-5C], but fails to teach the analog-to-digital converter is a sigma-delta analog-to-digital converter.

Shi teaches the analog-to-digital converter is a sigma-delta analog-to-digital converter [Σ-Δ ADC 217, Fig. 2], using the same rationale claim 3 above to combine Shi to Hughes.

For claim 20, Hughes & Shi fail to teach the digital filter. Takatz teaches wherein the selectivity circuitry comprises digital filters [digital filter 17-I, 17Q], using the same rationale in claim 15 to combine Takatz to Hughes & Shi.

8. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hughes in view of Shi, Takatz, as applied to claim 15 above, and further in view of Ciccarelli et al. (US 6,498,926 B1).

For claim 18, Shi teaches the wherein the automatic gain control circuitry 222 for comparing wide band threshold, thrs_A at step 602 & narrow band threshold, thrs_C at step 612, but fails to teach the configured to receive threshold value.

Hughes, Shi, Takatz fail to teach the AGC circuitry is further configured to receive a wide band & narrow band threshold value.

Ciccarelli et al. [Ciccarelli] teaches the adjusting the rssi threshold based on the BER, FER performance [col. 12, lines 39-54], in order to maintaining the signal quality. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to upgrade Hughes, Shi, Takatz with Ciccarelli's adjustable rssi threshold, in order to maintaining the signal quality.

9. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hughes-'676A1 in view of Shi, Takatz, Ciccarelli, as applied to claim 18 above, and further in view of Hughes [US 2003/0207,674 A1].

For claim 19, Takatz teaches the radio receiver [Fig. 1, Fig. 5A-5C], together with Shi & Ciccarelli in claim 18 above, but fail to teach the wherein the automatic gain control circuitry is further configured to receive at least one hysteresis value.

Hughes teaches the wherein the automatic gain control circuitry [AGC 170 & associated circuitry in Fig. 1] is further configured to receive at least one hysteresis value [the hyteresis can be adjusted to +/-6 dB in paragraph 0040], to compensate the threshold changes for the AGC. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to upgrade Takatz, Shi & Ciccarelli with Hughes' adjustable hysteresis, in order to compensate the threshold changes for the AGC.

10. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takatz in view of Shi-'842 A1 and Walker-'919 A1.

For claim 12, Takatz teaches a method of operating a radio receiver [Fig. 1, Fig. 5A-5C & its description in specification, claims 1, 6-7] having a plurality of serially coupled variable gain amplifiers [VGA1 to VGA3, Fig. 5A], and a digital portion [15] that performs, at least

partially, a frequency selectivity function [digital filter 17-I, 17-Q, Fig. 1, 160-I/160q in Fig, 5B & its description in specification], but fails to teach the steps a) to g).

Shi teaches a radio receiver an analog down-conversion portion, to provide digital signal via sigma-delta ADC 217[Fig. 2, analog mixer 212], including the method comprising

a) setting each of the plurality of the variable gain amplifiers to a high gain state [setting the LNA to maximum gain in paragraph 0015, for the plurality of amplifiers in 12 of Takatz] ;

b) obtaining a wide-band signal power estimate; c) obtaining a narrow-band signal power estimate [estimating wide, narrow, band power at 218, 222, paragraph 0043];

d) determining if the wide-band signal power estimate is greater than the value of a wide-band threshold, e) setting a first one of the plurality of variable gain amplifiers to a low gain state if the determination in (d) is affirmative [reducing the gain in step 604, if the wide band Rssi_A is greater than threshold_A at step 602, Fig. 6],

f) if the determination in (d) is negative [N from step 602], determining if the narrow-band signal power estimate is greater than the value of a narrow-band threshold [narrow band power Rssi_B is compared with threshold thres_C at 612]; and

g) setting the first one of the plurality of variable gain amplifiers to a low gain state if the narrow-band signal power estimate is greater than the first narrow-band threshold value [reducing the gain of LNA at step 616 if narrow power Rssi_B is greater than thres_C at step 612], to avoid the intermodulation interference [paragraph 0044]. Takatz & Shi are both in the same field, for the teachings of the automatic gain control for a receiver, to control the front end gain, to provide digitally converted receiving data via ADC converter for further processing, without degrading the reception, to limit the ADC clipping via AGC loop to the front end gain in Takatz, while Shi is applying the AGC loop to the frond end to avoid the intermodulation interference. They are both in the same field of teachings. Therefore, It

would have been obvious to one of ordinary skill in the art at the time the invention was made to upgrade Takatz with Shi's detecting of wide band signal power level with the threshold, such that the receiver reception could be better by avoiding the intermodulation interference.

Takatz, Shi fail to teach the hysteresis.

Walker teaches the hysteresis value for the threshold [the hysteresis for the gain stepping in Fig. 4C, for the gain rising & gain falling, low gain in table 1, paragraph 0078-0080], for reliable controlling the gain changes with hysteresis. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to upgrade Takatz, Shi with Walker's hysteresis, in order to reliably controlling the gain changes with hysteresis.

11. Claims 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takatz in view of Shi, Walker, as applied to claim 12 above, and further in view of Husted et al. [US 2003/0012,313 A1].

For claim 13, Takatz teaches the method as shown in claim 12 above. Shi teaches the wide band threshold, thres_A at step 602. Takatz, Shi, Walker fail to teach the further comprising dynamically assigning a value to the threshold.

Husted et al. [Husted] teaches the dynamically assigning a value to the threshold [the saturation threshold can be down loaded in paragraph 0041], in order to adjust the threshold values. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to upgrade Takatz, Shi & Walker with Husted's adjustable threshold, in order to avoid the saturation of the ADC.

For claim 14, Takatz teaches the method together with Shi, Walker in claim 13, although Shi teaches the narrow band threshold, thres_C at step 612, but fails to teaches the dynamically assigning a value to the threshold.

Husted et al. [Husted] teaches the dynamically assigning a value to the threshold [the saturation threshold can be down loaded in paragraph 0041], in order to adjust the threshold values. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to upgrade Takatz, Shi & Walker with Husted's adjustable threshold, in order to avoid the saturation of the ADC.

Response to Argument

12. Applicant's arguments with respect to claims 1-20 have been considered but are moot in view of the new ground(s) of rejection.

Regarding applicant's amendment for the no teaching from Takatz, for the obtaining a wideband signal power estimation of total signal power reaching the A/D converter [page 9 of applicant's amendment, 6/6/2007],

Hughes et al. [US 2003/0207,676 A1] teaches the obtaining a wideband signal power estimation of total signal power reaching the A/D converter [the wide band power measure 106 obtains the total wide power at the input of A/D, Fig. 1, to mitigating the received power overloading, via AGC 108 in paragraph 0008-0009; step 302 in paragraph 0015],

preventing the total signal power reaching the A/D converter from exceeding a maximum allowable input amplitude [to preventing the total power from exceeding the pre-programmed threshold, as the maximum allowable amplitude, & to quickly mitigate the received power overloading in paragraph 0010, by adjusting the gain of IF 116 in paragraph 0008-0009, 0013, 0017, by comparing with the allowable threshold in steps 304/310; the saturation of the base band filters in paragraph 0002-004. It is well known that the A/D

converter has the operable upper input power level. Therefore, the preventing of the BBF 118 from saturation is to limiting the A/D input power level, outputted from BBF 118].

Regarding the argument for Takatz & Shi are distinctly different receiver architecture, for the combining of Shi to Takatz [page 10 of applicant amendment, 6/6/2007],

Takatz & Shi are both in the same field, for the teachings of the automatic gain control for a receiver, to control the front end gain, to provide digitally converted receiving data via ADC converter for further processing, without degrading the reception, to limit the ADC clipping via AGC loop to the front end gain in Takatz, while Shi is applying the AGC loop to the frond end to avoid the intermodulation interference. They are both in the same field of teachings. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to upgrade Takatz with Shi's detecting of wide band signal power level with the threshold, such that the receiver reception could be better by avoiding the intermodulation interference.

Conclusion

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles Chow whose telephone number is (571) 272-7889. The examiner can normally be reached on 8:00am-5:30pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban can be reached on (571) 272-7899. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public

PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Charles Chow CC

September 14, 2007.

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